CLAIMS

1   A method of selecting or de-selecting an individual transponder, or one or more groups of transponders, using one or more command signals from an interrogator, the transponder or transponders being within a field of interrogation, including the step of transmitting from the interrogator a command signal or signals, the or each of which includes selection or de-selection criteria whereby if a transponder meets the selection or de-selection criteria it determines the condition of a flag, said condition of the flag being used to determine one or more subsequent operations of the transponder.

2   A method of selecting or de-selecting an individual transponder, or one or more groups of transponders, using one or more command signals from an interrogator, the transponder or transponders being within a field of interrogation, including the step of transmitting from the interrogator a command signal or signals, the or each of which includes data for comparison with data stored in the memory or memories of the transponder or transponders whereby the transponder or transponders set or reset a select flag dependent on whether they are to be selected or de-selected.

3   A method as claimed in claim 2, wherein if the data in the transponder memory corresponds to that sent by the command signal, the transponder is either selected or de-selected dependent on the setting of the select flag in the transponder.

4   A method as claimed in claim 2, wherein if the data in the transponder memory does not correspond to that sent by the command signal, the transponder is either selected or de-selected dependent on the setting of the select flag in the transponder.

5   A method as claimed in any one of claims 2 to 4, wherein the select flag is connected to one or more logic gates which together define selection logic circuitry of the transponder.

6   A method as claimed in any one of claims 2 to 5, wherein the flag is in the form of a bistable or flip-flop, the flag determining whether the transponder should respond to a Query command from the interrogator or participate in an arbitration sequence or not.

7   A method as claimed in claim 6, wherein if the select flag is set, the transponder will reply to a Query command or if not set, will not reply to a Query command.

8   A method as claimed in claim 6, wherein if the select flag is not set, the transponder is adapted to participate in an arbitration sequence or reply to a Query command.

9   A method as claimed in any one of claims 2 to 8, wherein the select flag serves as an exclusion mechanism, whereby groups or sub-groups of transponders may be excluded from the arbitration sequence using this same select flag as part of the determination mechanism.

10 A method as claimed in any of claims 1 to 9, wherein the selection or de-selection of an individual transponder, or group or groups of transponders, uses a number of commands with parameters to address a population of transponders using any content of the transponder memory as a target selection field.

11 A method as claimed in any one of claims 1 to 10 wherein the selection process is undertaken either as part of an arbitration process or as an independent process.

12 A method as claimed in any one of claims 1 or 11, wherein the selection process allows individual or groups of transponders to be selected, excluded or a combination of selection and exclusion using just one command with a settable/resettable exclude flag.

13 A method as claimed in claim 12, wherein said one command is a select command the parameters of which allow one or more transponders to be placed in a selected condition or removed from the selected condition according to a selection mask which is compared with a portion or all of the memory contents stored on the or each transponder.

14 A method as claimed in claim 13, wherein a connect command is used to address an individual transponder or a group of transponders in order to conduct a dialogue with it or them in the case of multiple transponders.

15 A method as claimed in claim 14, wherein a Query command is used to allow the interrogator to query the population present for the presence of any transponders which have met the selection criteria.

16 A method as claimed in claim 15, wherein an acknowledge command is used to acknowledge the successful completion of an arbitration sequence of completion of a dialogue with a transponder.

17 A method as claimed in claim 16, wherein a singulate command is used during an arbitration sequence to place an individual transponder into a state whereby a dialogue may be conducted with it.

18 A transponder comprising logic circuitry responsive to a command signal from an interrogator, whereby if the transponder meets selection or de-selection criteria in the command signal it determines the condition of a flag, said condition of the flag being used to determine one or more subsequent operations of the transponder.

19 A transponder as claimed in claim 18, wherein the transponder has a memory, a select flag and a comparator for comparing data in the command signal with data in the memory, whereby the transponder sets or resets the select flag dependent on whether it is to be selected or de-selected.

20 A transponder as claimed in claim 19, wherein if the data in the transponder memory does not correspond to that sent by the command signal, the transponder is either selected or de-selected dependent on the setting of the select flag in the transponder; or if the data in the transponder memory does correspond to that sent by the command signal, the transponder is still selected or deselected dependent on the setting of the select flag.

21 A transponder as claimed in claim 19 or claim 20, wherein the select flag is connected to one or more logic gates which together define selection logic circuitry of the transponder.

22 A transponder as claimed in any one of claims 19 to 21, wherein the flag is in the form of a bistable or flip-flop, the flag determining whether the transponder should respond to a Query command from the interrogator or participate in an arbitration sequence or not.

23 A transponder as claimed in any one of claims 19 to 22, wherein if the select flag is set, the transponder will reply to a Query command or if not set, will not reply to a Query command.

24 A transponder as claimed in any one of claims 19 to 22, wherein if the select flag is not set, the transponder is adapted to participate in an arbitration sequence or reply to a Query command.

25 A transponder as claimed in any one of claims 19 to 24, wherein the select flag serves as an exclusion mechanism, whereby groups or sub-groups of transponders may be excluded from the arbitration sequence using this same select flag as part of the determination mechanism.

26 A plurality of transponders, each of which is as claimed in any one of claims 19 to 25, wherein the selection or de-selection of an individual transponder, or group or groups of transponders, uses a number of commands with parameters to address a population of transponders using any content of the transponder memory as a target selection field.

27 A transponder as claimed in any one of claims 19 or 25, wherein a settable/resettable exclude flag is provided whereby the selection process can select individual or groups of transponders to be selected, excluded or a combination of selection and exclusion using just one command.

28 A transponder as claimed in claim 27, said one command is a select command the parameters of which allows the transponder to be placed in a selected condition or removed from the selected condition according to a selection mask which is compared with a portion or all of the memory contents stored on the or each transponder.

29 A transponder as claimed in claim 28, wherein the transducer is responsive to a connect command which is used to address an individual transponder or a group of transponders in order to conduct a dialogue with it or them in the case of multiple transponders.

30 A transponder as claimed in claim 29, wherein the transducer is responsive to a Query command which is used to allow the interrogator to query the population present for the presence of any transponders which have met the selection criteria.

31 A transponder as claimed in claim 30, wherein the transducer is responsive to an acknowledge command which is used to acknowledge the successful completion of an arbitration sequence of completion of a dialogue with a transponder.

32 A transponder as claimed in claim 31, wherein the transducer is responsive to a singulate command which is used during an arbitration sequence to place an individual transponder into a state whereby a dialogue may be conducted with it.

33 An identification system comprising an interrogator and a plurality of transponders, the interrogator including a transmitter for transmitting selection or de-selection criteria in one or more command signals to select or de-select an individual transponder, or one or more groups of transponders, each transponder including a receiver for receiving the command signal or signals and logic circuitry responsive to the command signal or signals, whereby if the transponder meets selection or de-selection criteria in the command signal it determines the condition of a flag, said condition of the flag being used to determine one or more subsequent operations of the transponder.

34 An identification system as claimed in claim 33, wherein the selection or de-selection criteria is in the form of data in the command signal or signals, the data to be compared with data in a memory or memories of the transponder or transponders within a field of interrogation, whereby the transponder or transponders set or reset a select flag dependent on whether they are to be selected or de-selected.

35 An identification system as claimed in claim 33 or claim 34, wherein each transponder includes the features defined in any one of claims 21 to 32.

36 An integrated circuit for use in a transponder including a receiver for receiving a command signal from an interrogator, comprising logic circuitry responsive to a command signal from the interrogator whereby if the integrated circuit meets selection or de-selection criteria in

the command signal it determines the condition of a flag, said condition of the flag being used to determine one or more subsequent operations of the integrated circuit.

37 An integrated circuit as claimed in claim 24, comprising a memory, a select flag and a comparator for comparing data in the command signal with data in the memory, whereby the circuitry sets or resets the select flag dependent on whether it is to be selected or de-selected.

38 An integrated circuit as claimed in claim 25, wherein if the data in the memory does not correspond to that sent by the command signal, the integrated circuit is either selected or de-selected dependent on the setting of the select flag in the transponder; or if the data in the memory does correspond to that sent by the command signal, the integrated circuit is still selected or deselected dependent on the setting of the select flag.

39 An integrated circuit as claimed in any one of claims 37 to claim 38, wherein the select flag is connected to one or more logic gates which together define selection logic circuitry of the transponder.

40 An integrated circuit as claimed in any one of claims 37 to 39, wherein the flag is in the form of a bistable or flip-flop, the flag determining whether the transponder should respond to a Query command from the interrogator or participate in an arbitration sequence or not.

41 An integrated circuit as claimed in any one of claims 37 to 40, wherein if the select flag is set, the transponder will reply to a Query command or if not set, will not reply to a Query command.

42 An integrated circuit as claimed in any one of claims 37 to 41, wherein if the select flag is not set, the transponder is adapted to participate in an arbitration sequence or reply to a Query command.

43 An integrated circuit as claimed in any one of claims 37 to 42, wherein the select flag serves as an exclusion mechanism, whereby groups or sub-groups of transponders may be

excluded from the arbitration sequence using this same select flag as part of the determination mechanism.

44 An integrated circuit as claimed in any one of claims 37 or 43, wherein a settable/resettable exclude flag is provided whereby the selection process can select individual or groups of transponders to be selected, excluded or a combination of selection and exclusion using just one command.

45 An integrated circuit as claimed in claim 44, said one command is a select command the parameters of which allows the transponder to be placed in a selected condition or removed from the selected condition according to a selection mask which is compared with a portion or all of the memory contents stored on the or each integrated circuit.

46 An integrated circuit as claimed in claim 45, wherein the circuit is responsive to a connect command which is used by the interrogator to address an individual transponder or a group of transponders in order to conduct a dialogue with it or them in the case of multiple transponders.

47 An integrated circuit as claimed in claim 46, wherein the circuit is responsive to a Query command which is used to allow the interrogator to query the population present for the presence of any transponders which have met the selection criteria.

48 An integrated circuit as claimed in claim 47, wherein the circuit is responsive to an acknowledge command which is used to acknowledge the successful completion of an arbitration sequence of completion of a dialogue with a transponder.

49 An integrated circuit as claimed in claim 48, wherein the circuit is responsive to a singulate command which is used during an arbitration sequence to place an individual transponder into a state whereby a dialogue may be conducted with it.

50 A method of identifying a plurality of transponders comprising transmitting a reader signal from a reader, receiving the reader signal in each transponder, recognising in the reader a transponder signal transmitted from a transponder and issuing a mute instruction from the reader muting all other transponders and passing control to said transponder, the muting

instruction causing the other transponder or transponders to have moved from an Active state to a Standby state where their wait cycle between transmissions has been suspended, and transmitting an Acknowledge instruction from the reader after the controlling transponder signal has been successfully received by the reader, the Acknowledge instruction causing the transponder that has been read to move to a Quiet state and causing the other transponder or transponders to move from their Standby state back to the Active state.

51 A method as claimed in claim 50, wherein a transponder moving between the Active state and the Standby state has a member flag set to suspend their random wait cycle, and their member flag is reset when moving from the Standby state to the Active state to continue their random wait cycle.

52 A method as claimed in claim 50 or claim 51, and also dependent on any one of claims 1 to 17, wherein the selecting or de-selecting of an individual, or one or more groups of transponders, moves them from a powered up Ready state to the Active state.

53 An identification system comprising a reader including a transmitter for transmitting a reader signal, and a plurality of transponders, each transponder including a receiver for receiving the reader signal and a transmitter for generating a transponder signal, whereby upon recognising a transponder signal from a said transponder the reader issues a mute instruction, muting all other active transponders and passing control to the said transponder, the muting instruction causing the other transponder or transponders to have moved from an Active state to a Standby state where their wait cycle between transmissions has been suspended, the reader issues an Acknowledge instruction after the controlling transponder signal has been successfully received by the reader, the Acknowledge instruction causing the transponder that has been read to move to a Quiet state and causing the other transponder or transponders to move from their Standby state back to the Active state.

54 An identification system as claimed in claim 53, wherein a transponder moving between the Active state and the Standby state has a member flag set to suspend their random wait cycle, and their member flag is reset when moving from the Standby state to the Active state to continue their random wait cycle.

55 An identification system as claimed in claim 53 or claim 54, wherein the selecting or de-selecting of an individual, or one or more groups of transponders, moves them from a powered up Ready state to the Active state.

56 An identification system as claimed in any one of claims 53 to 54 wherein each transponder in the system includes the features defined in any one of claims 21 to 32.

57 A transponder as claimed in any one of claims 21 to 32, wherein the transponder is responsive to a muting instruction causing the transponder to have moved from an Active state to a Standby state where its wait cycle between transmissions has been suspended, the transponder being responsive to an Acknowledge instruction causing the transponder to move from its Standby state back to the Active state.

58 A transponder as claimed in claim 57, wherein the transponder when in the Active state is responsive to an Acknowledge instruction from the reader to move the transponder from the Active state to a Quiet state.

59 An integrated circuit as claimed in any one of claims 35 to 49, wherein the circuit is responsive to a muting instruction causing the circuit to have moved from an Active state to a Standby state where its wait cycle between transmissions has been suspended, the circuit being responsive to an Acknowledge instruction causing the circuit to move from its Standby state back to the Active state.

60 An integrated circuit as claimed in claim 59, wherein the circuit when in the Active state is responsive to an Acknowledge instruction from the reader to move the circuit from the Active state to a Quiet state.

61 A reader for identifying a plurality of transponders, the reader comprising a transmitter for transmitting a command signal or signals to the transponders, the command signal or signals including selection or de-selection criteria to select or de-select an individual transponder, or one or more groups of transponders, whereby the transponder or transponders set or reset a select flag dependent on whether they are to be selected or de-selected.

62 A reader including a transmitter for transmitting a reader signal to a plurality of transponders, each transponder including a receiver for receiving the reader signal and a transmitter for generating a transponder signal, whereby the reader upon recognising a transponder signal from a said transponder is adapted to issue a mute instruction, muting all other active transponders and passing control to the said transponder, the muting instruction causing the other transponder or transponders to have moved from an Active state to a Standby state where their wait cycle between transmissions has been suspended, the reader also being adapted to issue an Acknowledge instruction after the controlling transponder signal has been successfully received by the reader, the Acknowledge instruction causing the transponder that has been read to move to a Quiet state and causing the other transponder or transponders to move from their Standby state back to the Active state.